Executive Summary of Technical Memorandum No. 1

Problem Definition

and

Initial Statement of Purpose and Need

I-70 MIS

JACKSON COUNTY MoDOT

Prepared for

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EXECUTIVE SUMMARY

The following narrative summarizes the content of *Technical Memorandum No. 1 - Problem Definition and Initial Statement of Purpose and Need*. This Technical Memorandum itself is a companion document providing an overview of the information gathered and documented in the *Interstate 70* (*I-70*) *Major Investment Study* (*MIS*) *Problem Definition Report (PDR)*. The full *PDR* provides a detailed account of the evaluation process that went into developing the I-70 "Initial Statement of Purpose and Need," including an appendix with the collected raw data.

ES-1. INTRODUCTION: KANSAS CITY'S *MAIN STREET*

I-70 in Jackson County is one of the Kansas City region's key commercial and commuter thoroughfares carrying tens of thousands of travelers and tons of goods daily to destinations all-around and through the Kansas City region.

Clearly, I-70 in Jackson County is important to the Kansas City region. But as any regular commuter knows, traffic does not always flow freely and the roadway, itself, needs major repairs. State and regional transportation leaders want to fix that.

Recognizing the importance of a safe, efficient and smooth I-70, the Missouri Department of Transportation (MoDOT), the Mid-America Regional Council (MARC) and the Kansas City Area Transportation Authority (KCATA) have launched the *I-70 MIS* Process with this main focus in mind. This Technical Memorandum is the companion document to the *PDR* that contains the complete analysis, including all the collected data. The *I-70 MIS* has two main components – the "Study Area" and the "Study Corridor."

The I-70 Study Area is bounded by the Missouri River to the north, and I-435, I-470 and U.S. 50 Highway to the south. Land use types represented in the I-70 Study Area include high and low-density residential, commercial, industrial, parks, regional shopping malls and recreational/ entertainment. Major communities in the Study Area include Kansas City, Independence, Lee's Summit, Raytown, Blue Springs, Grain Valley, and Oak Grove.

The I-70 Study Corridor is approximately 28 miles in length from Downtown Kansas City's Central Business District (CBD), eastward to the intersection of State Routes F/H located in Oak Grove, Missouri. The I-70 Study Corridor includes the interstate roadways, interchanges, bridges, and other features within the I-70 right-of-way. It also includes Interstates 70, 670, 35 and 29 that all converge and encircle the CBD known as "the loop" and the interchanges and connections with each of these interstates located at the loop's four corners. The data collected during this first phase of the I-70 MIS process included an operational analysis, traffic data, and assessment of the physical characteristics of the loop's interstates and interchanges. As I-70 Major Investment Strategies involving the loop begin to take shape, they will be evaluated in more detail to see what is needed to support Kansas City's long-range land use and transportation planning initiatives. MoDOT's Transportation Management System (TMS) also provided useful data for this additional loop analysis. Similarly, the I-70 MIS will be evaluated to determine all other community transportation needs that utilize the I-70 Study Corridor.

Other major routes that run parallel to I-70 are also being evaluated to determine their ability to support I-70 Major Investment Strategies. This study refers to these important other routes as the "parallel network." The parallel network's role as a part of the I-70 Study Corridor will become more clear as how these routes might better work with I-70 also becomes more clear during the development of I-70 Major Investment Strategies.

The MIS process is being conducted in accordance with established MIS policy and guidance that has been developed by both MARC and MoDOT. The basis for the *I-70 MIS* includes currently programmed projects that are scheduled for implementation as identified in the MARC *Transportation Improvement Plan* (*TIP*) *2002-2006* or are considered as existing and committed plans. The *I-70 MIS* will also incorporate the results of other transportation-related studies prepared under MoDOT, MARC and KCATA guidance. Two recently completed MIS reports are particularly relevant to the I-70 Study Corridor. These are the *Northland / Downtown MIS* and the Statewide *I-70 First Tier Environmental Impact Statement*. Other regional transportation initiatives of importance to the *I-70 MIS* include the MARC's *Regional Commuter Rail Study*, *MetroGreen*, *Transit Investment Strategy*, *Operation Greenlight* plans, other related past MIS documents and initiatives involving the development of Intelligent Transportation Systems (ITS).

The *I-70 MIS* first identifies the challenges, needs, goals and objectives for the specific project areas and then develops and analyzes potential major transportation system improvement strategies. The development of the *I-70 MIS* improvement strategies within the vicinity of the downtown loop will specifically be to evaluate their compatibility with the final recommended strategies developed under the *Northland / Downtown MIS*. Overall, the Northland / Downtown MIS Preferred Strategy that will be assumed as a part of the loop network for the purposes of this study is, as follows:

- ✓ **New 8-Lane Paseo Bridge**: I-29 would be generally upgraded and widened to an eight-lane section from US 169 into downtown, including a new companion Paseo Bridge over the Missouri River.

- ✓ **New I-29 Direct Access to Downtown**: New I-29 direct access into the northeast corner of downtown as a separate and isolated facility; this concept also entails utilizing one-way frontage roads along the eastern leg of the loop.

- ✓ **New Broadway Bridge Flyover Ramps to I-35**: New fly over ramps would be added from the southern terminus of the Broadway Bridge over to I-35 on the west side of the downtown freeway loop which will improve traffic flow at its northwest corner interchange of I-35 and I-70.

- ✓ **Consolidated Access and Enhanced Pedestrian Scale Connections**: Some existing Interstate on- and off-ramps would be consolidated along the northern leg of the loop which also allows for widening of bridge decking over the northern leg to provide better pedestrian-scale connectivity between downtown and the River Market.

- ✓ **Expanded Bus Transit Service**: Bus transit service would be expanded and pedestrian improvements made on the existing Heart of America Bridge.

- ✓ **New Fixed Guideway Bridge**: A new transit fixed guideway bridge over the Missouri River adjacent (east) to the Heart of America Bridge was also recommended.

These improvements were shown to benefit the loop, the I-70 Study Corridor and other elements of the highway system that connect to the loop. Even with these Northland / Downtown MIS Preferred Strategies, additional *I-70 MIS* loop strategies may have to be developed and evaluated if all of the *I-70 MIS* developed strategies are deemed incompatible. The *I-70 MIS* strategies will also be developed to promote and support local and regional land use plans.

The study limits for the *I-70 First Tier Environmental Impact Statement* (i.e., the I-70 Statewide Study referred to as the *I-70 FTED*) and this MIS also overlap. Given the statewide interstate travel demands demonstrated by the *I-70 FTED*, six lanes were shown to be necessary between the interstate connections to Kansas City (I-470) and St. Louis (I-64). For the *I-70 MIS*, six-lane widening of I-70 from the existing lane drop at Route 7 to the east will also be considered a minimum requirement. Past I-470 and State Route F/H, capacity improvements beyond this minimum six-lane requirement is subject to the findings of the *I-70 MIS*. Furthermore, the extension of the six-lane requirement west of I-470 would be contingent upon the metropolitan planning process and the findings of the *I-70 MIS*.

Section 1 also describes the overall MIS process including Kansas City's long-range transportation plans, the relationship to MARC and MoDOT policies, and relationships to other transportation studies in the region. Section 1 outlines how the study will be managed, the public involvement plan, and the decision-making process that involves four distinctive milestones. These four milestones are Purpose and Need, Performance Measures, Alternative Strategies, and Preferred Strategy.

The need for conducting this MIS was detailed in the long-range transportation plan for the Kansas City metropolitan region entitled *Transportation 2020* (1995). *Transportation 2020,* and its successor now being developed – *Transportation Outlook 2030*, define broad transportation system improvement goals for the Kansas City region relating to the economy, community and the environment. Together, these goals describe optimal regional transportation systems from three perspectives – planning and financing, mobility and physical design. Another key perspective important to the *I-70 MIS* policy framework is the relationship between the transportation system and how it can better support or promote future land use plans of various communities it serves. This perspective is addressed by considering, where appropriate, how accessibility can be improved to surrounding communities.

The management of the *I-70 MIS* is being facilitated by the I-70 Study Management Team (SMT). The SMT is made up of agency staff from MoDOT, MARC, and KCATA, who continue to meet with the public, community and business leaders, public officials and other stakeholders, in roundtables, public meetings or other means, throughout the process to ensure their ongoing input. Moreover, the SMT is committed to involving public officials whose jurisdictions may be affected by the outcome of the MIS to ensure their ongoing input before making appropriate transportation investment decisions. Key members of the consultant team, stakeholders, interested parties and others with certain needed expertise will be invited to work with the SMT as important issues and challenges arise.

In addition, Community Roundtables (C.R.) and Technical Group Roundtables (T.G.R.) were designed specifically to address how other local jurisdictions and interested parties will be able to formally review and comment on *I-70 MIS* draft documents prior to being widely distributed for final public review. These groups will be formally involved at three distinctive milestones, as follows:

- ✓ **Purpose and Need**

  The first step is formulating a problem statement called "Initial Statement of Purpose and Need". This involves defining the I-70 Study Corridor, developing a detailed public involvement program, establishing the travel challenges to be solved and opportunities to enhance for determining study goals and objectives, and documenting these major issues (i.e., this Problem Definition Report). This statement also defines the needs that

all of the alternative transportation strategies in the MIS will be designed to address. Moreover, the Initial Statement of Purpose and Need establishes goals and objectives, as depicted in Figure ES-7, for the evaluation of alternative strategies by indicating which particular "Performance Measures" are relevant to the MIS.

✓ **Alternative Strategies**

Once the challenges and opportunities in the I-70 Study Area have been identified, step two is to make decisions about the generation and definition of "Alternative Strategies" for evaluation in the MIS. This involves defining acceptable and reasonable transportation investment strategies, including the "No-Build" strategy. It will begin by focusing on highway, rail, bus, transportation management and Intelligent Transportation System (ITS) strategies, and other, yet to be determined innovative solutions on as broad a range of potentially feasible and prudent concepts as possible.

✓ **Preferred Strategy**

The last step is to refine the various alternative investment strategies and evaluate their effectiveness in meeting study goals and objectives, in order to develop the "Preferred Strategy." This is the alternative or combination of alternatives, at the design concept and scope level of detail, that best addresses the MIS Purpose and Need as determined by consideration of the transportation, land-use, environmental, social and fiscal impacts of all of the alternatives. This is also the principal product of the MIS. The various strategies will be evaluated through the quantified measures of effectiveness and other proposed performance measures previously developed in step two.

ES-2. POLICY FRAMEWORK

Section 2 identifies key federal, state and local policies and plans that need to be accounted for throughout the *I-70 MIS* process. These policies include *Intermodal Surface Transportation Efficiency Act* (*ISTEA*), the *Transportation Equity Act for the 21st Century* (*TEA-21*) planning factors, MoDOT's *Long-Range Transportation Direction* (*LRTD*) which is not a binding plan but instead serves as an advisory function to future MoDOT system improvements, and MoDOT's *Missouri Transportation Investment Strategy* (*MoTIS*), which provides a shorter term direction for the Department. The final stage in the planning process is the *STIP*, which is the five-year plan that identifies specific projects and MoDOT's commitment for construction during that period.

For the larger urban areas the projects listed in the *STIP* are developed by the Metropolitan Planning Organization (MPO), which for Kansas City is MARC. The Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) provide a regional blueprint for transportation investments in the Kansas City area. MARC is currently working with MoDOT, KDOT and other state and local planning partners to comprehensively update the RTP.

MARC recently completed a comprehensive revision to its Congestion Management System (CMS), which identifies areas of current or future roadway congestion and suggests potential short-term and long-term solutions for addressing the congestion. The potential strategies, which are oriented towards reducing congestion and improving air quality, are sensitive to the causes of congestion and unique attributes of the particular congested area. Additionally, the CMS provides a means of evaluating and recommending alternative strategies to manage the performance of the congestion relief strategies, known as the CMS Toolbox. According to the CMS, almost all segments of I-70 within Jackson County are currently congested according to at least one of the five measures used in the CMS.

Throughout the past five years, a variety of studies have been undertaken to review transportation-related issues at the regional and local level in Kansas City. The various studies were the subject of reviews as discussed in Section 2 which includes the procedures and recommendations from these completed studies, as well as initial findings from ongoing work. The results of these other local and regional studies will be used to identify deficiencies and potential strategies to be considered in the MIS.

Another important plan the *I-70 MIS* process will consider as input is MARC's *MetroGreen* plan. This action plan identifies the regional system of about 1,000 miles of green corridors and trails linking Johnson, Leavenworth, Wyandotte, Cass, Clay, Jackson and Platte counties in the Kansas City area. The *I-70 MIS* recognizes the importance of this plan which is to identify this regional system and assign priorities for its implementation.

Overall, the *I-70 MIS* will evaluate major transportation investment strategies for improving the transportation system that works with the I-70 Study Corridor through Jackson County in the context of long range regional and statewide plans and programs in the Kansas City Metropolitan area. Earlier involvement of key agencies, interested parties and the general public will help identify future improvements to this important ***major thoroughfare*** sooner and put them into action, *now*.

ES-3. I-70 MIS STUDY AREA CHARACTERISTICS

The *I-70 MIS* has two main elements – the "Study Corridor" and the "Study Area," as depicted in Figure ES-3 (attached).

The I-70 Study Area, shaded green in Figure ES-3, is bounded by the Missouri River to the north, and I-435, I-470 and U.S. 50 Highway to the south. Within the Study Area, the MIS focuses on defining surface transportation issues, identifying community concerns, and evaluating short- and long-term transportation investment strategies designed to make the entire system function better. This will be accomplished by using a process that identifies and develops specific *I-70 MIS* goals that work with and support MoDOT, KCATA, and MARC transportation planning goals.

Within the Study Area is the I-70 Study Corridor. Figure ES-3 shows the mainline I-70 Study Corridor in red. The I-70 Study Corridor is approximately 28 miles in length from Downtown Kansas City including the loop Interstates 70, 670, 35 and 29 and their interchanges that all converge and encircle the CBD and continues eastward to the intersection of State Routes F/H located in Oak Grove, Missouri. The Study Corridor includes, but is not explicitly limited to, the interstate roadways, interchanges, bridges, and other features within these various interstates right-of-way that all-together work with I-70.

I-70 Study Area

Land use types represented in the I-70 Study Area include high and low-density residential, commercial, industrial, parks, regional shopping malls and recreational/ entertainment. Major communities in the Study Area include Kansas City, Independence, Lee's Summit, Raytown, Blue Springs, Grain Valley, and Oak Grove.

Land uses in the Study Area can generally be described as urban in the western region of the Study Area for approximately 12 miles, as it passes through Kansas City and Independence. In this area, the dominant land uses adjacent to I-70 are primarily a mixture of commercial and

residential uses. Between Independence and Blue Springs a transition occurs from heavily urbanized to more rural with a mixture of commercial, residential and agricultural/open space land uses occurring adjacent to I-70. In the eastern region of the Study Area the prevalent land uses are agricultural and residential, between the U.S. Highway 291 / I-470 interchange and the community of Oak Grove.

There are five major roadways that provide a parallel network of east-west roads to I-70. These routes are U.S. Highway 24, Truman Road / State Route 12, 23rd Street / State Route 78, 31st / 39th streets, and U.S. Highway 40. Some of these adjacent road networks have numerous stop signs, traffic signals and transitions from 2 lanes to 4 lanes with vehicles allowed to park along the sides. These roadways offer very few opportunities in their current condition to provide alternatives to using I-70, particularly for trucks and buses. This means improvements to these routes are needed to make them work better with I-70 as a parallel network and they are included in the *I-70 MIS* analysis for this reason.

In addition to serving local needs, I-70 is also the main artery for traffic traveling to and from other cities and places across the state, such as St Louis, Jefferson City, and Columbia. Some of the interstate traffic heading east and west through Kansas City is bound for major population centers in adjacent states of Kansas and Illinois.

Other important transportation issues affecting I-70 on a statewide basis were evaluated by the *I-70 First Tier Environmental Impact Statement Document* (*FTED*). A series of more detailed environmental documents are being completed as follow-on to the *FTED* and they will help define the final solutions and design features for I-70 statewide.

I-70 Study Corridor

The I-70 Study Corridor is located entirely within Jackson County, Missouri. Communities adjacent to the Study Corridor include Kansas City, Independence, Blue Springs, Grain Valley, and Oak Grove.

The immediate transportation network includes over 225 roadways within 500 feet of the I-70 Study Corridor that serves the Study Area. Approximately 100 of these roadways are located within the Kansas City area and 80 within the Independence area. Major roadways intersecting I-70 include I-670, I-35, and I-435, US Highways' 71, 69 and 40, Highway 291/I-470 and M-9, State Highway 7, and State Routes AA/BB and F/H.

Commercial land use along the I-70 Study Corridor includes retail stores, several hotels, as well as a many other types of businesses. There are approximately 547 developed commercial properties located within 500 feet of the existing Study Corridor.

Residential areas are located along the entire length of I-70 Study Corridor. There are approximately 3,610 residences located within 500 feet of I-70 Study Corridor, of which over 800 are apartments. The Kansas City Housing Authority apartments are located adjacent to I-70, on the east side of The Paseo. In addition, several commercial properties have been renovated for residential use in the downtown area. There are currently several proposals to develop areas north of the downtown loop as residential properties.

Section 3 establishes the framework for understanding how population, employment and demographics, employment and commuter patterns, and environmental justice have an impact on the challenges facing the I-70 Study Area. Section 3 also presents key environmental

factors and projected growth and development factors that have a direct bearing on the I-70 Study Area.

Section 3 also describes MoDOT's noise abatement policy regarding noise issues, which covers both Type I and Type II projects. Type I projects are those which involve the construction of a highway on new location or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment or increases the number of through traffic lanes or the roadway capacity. Type II projects occur only on existing highways where the development existed before the existing typical section of the highway was constructed or expanded or for which land use was established before May 14, 1976. Highway traffic noise impacts must be addressed on all Type I federal-aid highway improvements as part of the environmental process. A noise impact occurs if the Noise Abatement Criteria (NAC) are exceeded. Generally, for residential noise sensitive receptors, MoDOT has established the NAC as a predicted L_{eq} of 66 dBA[1].

It is also the mission of MoDOT to better address these factors by communicating and coordinating more effectively with stakeholder groups. By working together, MoDOT and the various stakeholders will find and implement resourceful and creative, *systemwide* transportation solutions for today and tomorrow.

ES-4. TRAVEL MARKETS AND PATTERNS

Section 4 builds on the framework of Section 3 to identify the purposes for travel, the top locations for travel and the various facilities and services available to users for getting from location to location within the I-70 Study Area. Specifically, Section 4 describes travel patterns within the Study Area in detail. Section 4 also explains the difference between *accessibility* and *mobility*. Understanding the importance of these two key terms is essential because they will be used extensively throughout the remainder of the *I-70 MIS* process.

Other important information presented in Section 4 include travel times via auto and transit for several representative, Study Area travel markets, accessibility to jobs and other activities, truck travel characteristics, and directional flow of traffic during rush hour.

In general, the communities that make up each travel market share similar characteristics in terms of geographic land features, travel destinations and highway congestion. The opposite is true regarding the availability of public transportation, and other transportation features. The current available transit service varies widely from virtually non-existent within the eastern Study Area to the highest regional levels within the western Study Area. The use of travel markets provides a wide-scale view of common issues among communities that shape transportation needs across the Study Area.

Overall travel patterns show great variation depending upon the trip purpose. Most travelers within the I-70 Study area for work, shopping or other purposes stay within their own vicinity or travel market. When trips do occur outside any given travel market, the downtown CBD is, by far, the largest attraction for work trips in comparison to all of other travel markets. The remainder of the work trips in the rest of the travel markets tend to have very dispersed destinations throughout the Kansas City region.

[1] MoDOT Project Development Manual, Section 2-04.

Additionally, a relatively large percentage of long-distance work trips that are destined to western Jackson County, which includes the CBD, originate from travel markets in central Jackson County (about 45 %) and eastern Jackson County (about 30 %). Of those trips not destined for the downtown CBD, in most other travel markets, between 25 percent and 33 percent of these work trips are destined to areas outside of the *I-70 MIS* Study Area. Interestingly, both Clay County and Johnson County, Kansas are each destinations for between 5 percent and 15 percent of the work trips from each of the travel markets. In general, trips from home to work show an east to west pattern in the I-70 Study Area.

Shopping trips and personal business trips, on the other hand, tend to occur in a more concentrated geographic area around each travel market. The vast majority of shopping and personal business trips occur either within the same travel market of residence, or to an adjacent travel market. Other than this tendency for shorter trip lengths, shopping and personal business trips do not show any predominate directionality within the I-70 Study Area.

Both morning and evening peak period travel times throughout the Study Area, too, are expected to increase by as much as 25 to 30 percent. A worst case example is the trip between Oak Grove and the Kansas City CBD that is projected to increase from 39 minutes to almost an hour during the morning rush hour commute. This increase for travel times regarding automobile trips is even more serious for transit travel times because it affects transit ridership, maintenance and operating costs. Even now because congestion is already occurring in the morning and afternoon during peak-hour commuter travel times, transit service is already delayed by the existing system bottlenecks.

Overall, Section 4 defines the travel demand in the I-70 Study Corridor. Knowing this helps determine the Study Corridor's existing and future needs. It also helps create a better understanding of why the conditions of the I-70 Study Corridor exist as they do.

ES-5. BASELINE CONDITIONS (NEED FOR THE MIS)

Section 5 defines the current conditions of the I-70 Study Area transportation system. This analysis is termed the "Baseline (2001) Conditions." It also presents how existing conditions might change over the next 20 years within the I-70 Study Corridor. This analysis is termed the I-70 "Future Baseline Conditions."

The I-70 Travel Demand Model was created by using some elements of the MARC regional planning model and combining it with some elements of the MoDOT statewide planning model. The various MARC and MoDOT modeling elements that were used, currently only work for the 2020 planning horizon year. The I-70 model may need adjustment if new factors, appropriate for the state and regional models, become available regarding a new planning horizon year (e.g., 2030).

The transportation systems assessed in Section 5 include public transportation, existing rail facilities, transit / bus systems, bicycle / pedestrian, park and ride, and highway facilities. Other systems considered but not extensively analyzed included the joint MoDOT / KDOT regional Intelligent Transportation System – **KCSCOUT**, the Transportation Management Services, MARC'S *MetroGreen* plan and other on-going transportation corridor analysis.

Of the seven existing rail lines in the I-70 Study Area, past studies show three have been considered for use in providing commuter rail service. These corridors are defined in terms of

geographic area around rail lines from which potential commuter rail passengers might be attracted. Primary traffic on these lines now is freight only. No commuter rail currently operates in the region. AMTRAK operates on two of these rail lines within the Kansas City area. AMTRAK offers two runs per day in each direction between Kansas City and St. Louis.

Currently, the KCATA Metro bus service is the primary transit operator in the Kansas City metropolitan area with about 16 bus routes (including 6 Independence intra-community routes) operating in the I-70 Study Area. The Metro operates a high level of transit service in only some parts of the study area and it is the only public bus service in Missouri currently available from eastern Jackson County to the Kansas City CBD. A limited number of these routes provide weekend service.

Overall, these bus services are concentrated more in the western part of the study area, north of I-70, with no service extending past Blue Springs. However, there is the Blue Springs Express service that operates along a portion of the I-70 Study Corridor which is funded through the Congestion Mitigation and Air Quality (CMAQ) program. The CMAQ program was only authorized for this express service for a 3-year period that is set to end in year 2002. Another major problematic issue that became apparent during this first phase of the *I-70 MIS* was the fact that no transit funding programs are available to operate transit on a regional basis. This fact greatly hinders expanding or enhancing transit service throughout the I-70 Study Area, and particularly to areas east of I-435.

A majority of the bicycle/pedestrian facilities within the region are multi-use trails. The average trail length is 2.4 miles, with facilities ranging from one-quarter mile to seven miles long. Most of these trails are currently park and recreational facilities. A few make multiple connections to adjacent neighborhoods and therefore may fulfill both recreation and transportation needs. Most, however, are closed loop trails or linear facilities that traverse parklands with few, if any, access points to the surrounding transportation system.

The Kansas City Metropolitan Area has approximately 35 park-and-ride facilities. Most of these are “shared-use” facilities that are located in shopping malls, churches and other convenient locations, and owned by private groups. Some of these facilities do not have transit service and are used only as commuter carpool lots, some facilities are connected by CMAQ funded transit service which is set to terminate in 2002, and some facilities have only peak hour transit service.

Within the I-70 Study Corridor, there are only five “exclusive” park-and-ride facilities. The capacity of these lots ranges from 40 to 75 cars. Daily lot usage ranges from three-quarter (¾) full to full capacity. MoDOT also owns a few of these park-and-ride facilities that have express commuter service. These facilities are experiencing high demand for enhancements. As noted earlier, however, the CMAQ funded I-70 express bus system that currently serves some of these exclusive park-and-ride facilities will not continue after year 2002.

In Jackson County, I-470 and I-435 work together with I-70 to provide a controlled access facility, meaning on and off points are restricted to highway interchanges. Even though these interstates move the greatest volume of traffic faster and safer than other highways in the Study Area, there are other principal arterial routes that still carry their share. They include U.S. Highways 24 and 40 and Missouri State Routes 78, 7 and 291. All together these other principal arterials work together with I-70 to move traffic all-around the Kansas City metropolitan region.

I-70's physical limits regarding infrastructure includes the actual Interstate roadway, bridges, interchanges, ramps, local roadway connections and signalized intersections at exit / entry ramp terminals and the overall section from state right-of-way line to state right-of-way line. These features provide the direct connections to the adjacent communities' transportation system and other pieces of the local communities' transportation networks. One interesting observation worth highlighting is the fact that many existing bridges that cross I-70 do not adequately accommodate pedestrian or bicycle traffic.

Intersection turning movements, ramp segments, basic interstate roadway sections, lane merge and weave sections, and roadway geometric configuration of the interstate are all aspects of the I-70 Study Corridor that were analyzed. The bridge and pavement conditions were also evaluated. Other known adjacent regional transportation systems, including the public transportation elements and other principal arterials, may become apart of the definition of the I-70 Study Corridor as their role in working with the I-70 Study Corridor becomes more clear.

Many major roadways, in and around I-70, from a general viewpoint could be seen as a parallel network to I-70. These major routes initially give the impression that they could work as diversionary routes to travelers who might otherwise use I-70. Often, these principal arterial roadways are constrained by on-street parking, signalization, and prevailing lane geometry. Moreover, the background traffic analysis identified several principal arterial routes that could potentially serve high volumes of traffic and increased bus service. They appear to be possible parallel, diversionary routes to I-70. Also, these highway facilities have 4 lanes, 2 in each direction, with virtually no on-street parking.

Section 5 also gives an overview of other related corridor studies and covers how their findings were utilized by the I-70 MIS as input into the problem definition phase. The Existing and Future Baseline Conditions provided the basis for identifying the key challenges and opportunities presented in Section 6.

ES-6. CHALLENGES AND OPPORTUNITIES (MIS NEEDS)

The challenges and opportunities specific to the I-70 Study Corridor, are directly related to the problems identified in Section 5. In this document the challenges and opportunities are identified as the "needs" of I-70 in Jackson County. That is, the needs are all those challenges that ideally would be resolved as a result of making the suggested improvements that result from the *I-70 MIS*.

I-70 Study Corridor

- ✓ **Peak-Period Congestion**: Running speeds along I-70 are lower during AM and PM peak periods during the week. Major slow downs, at more than 20 mph below the posted speed limit, typically occur throughout the Study Corridor during the morning and evening rush hour periods. Moreover, peak hour morning and evening traffic substantially reduce the level of service to unacceptable and as a result, freedom to maneuver within the traffic stream becomes difficult during these times. Delays will increase in the future.

- ✓ **Bridge and Pavement Conditions**: Deteriorating pavement conditions, low bridge clearances, and other functionally obsolete and structurally deficient aspects, present throughout the I-70 Study Corridor, fall below MoDOT's standards.

- ✓ **Accident History**: Several locations along I-70 are currently exhibiting accident rates higher than the statewide average by as much as 50 percent. Accident data for I-70 collected by MoDOT shows an increasing trend in serious accidents and total economic losses for the last 10-year period.

- ✓ **Ramp Congestion and Delay**: Several of the intersections associated with the ramps from I-70 are congested and causing delays.

- ✓ **Highway Deficiencies**. I-70 is over 40 years old. It was not originally designed to carry the volume of traffic and trucks and the weight of freight that it carries today. An overview of the horizontal and vertical alignments, pavement and bridge conditions and other I-70 roadway system components throughout the Study Corridor identified a number of deficiencies, including but not limited to:

  - Substandard capacity and operating levels of service at key locations
  - Excessive S-shaped curves located at Benton Boulevard and Jackson Avenue, that are compounded by insufficient distance for transitions between these curves
  - The number of continuous through lanes in one direction varies frequently
  - Inconsistent ramp configurations with several sub-standard lane acceleration and deceleration lanes at the interchanges that cause confusion and lead to accidents
  - Lack of continuous mixed flow lanes throughout the Study Corridor
  - Poor sight distances, particularly for signing and lighting purposes, which cause driver confusion
  - Substandard median shoulder widths

- ✓ **Increased Maintenance and Operating Costs**: Increasing operating and maintenance costs of all transportation systems using the I-70 Study Corridor is escalating beyond currently available resources. This is discussed in more detail in the PDR Technical Memorandum and it is based, in part, on data collected and analyzed by the University of North Carolina – Charlotte for MoDOT. A basic challenge leading to this affect is that Missouri has the seventh-largest highway system in the nation, yet ranks 46th in revenue per mile.

- ✓ **Potential Economic Losses**: I-70 is an important statewide and national route for truck shipments. The poor road conditions and traffic congestion on I-70 lead to direct economic losses that can result in higher consumer prices in Kansas City and elsewhere.

Parallel Network

- ✓ **Mobility**: The potential parallel highway routes are presented in Section 5. Although these routes could provide an alternate means of travel to I-70, there is a cost to using these routes. Constraints such as on-street parking, driveways, undivided cross-sections, low speed limits, and close spacing of traffic signals and stop signs keep overall travel speeds low, thus making the parallel network less appealing to users as an alternate route.

- ✓ **Bridge and Pavement Conditions**: Current pavement conditions are considered to be "fair" to "poor" while bridges are generally in good condition. When compared to I-70, the parallel network pavement and bridge conditions are similar. However, the parallel networks were not designed to carry the volumes of traffic and high truck percentages of I-70. If they do, the pavement and bridges would deteriorate at faster rate than the pavement and bridges on I-70.

- ✓ **Poor Interchange Access:** Current interchange geometrics at some locations are not sufficient to serve current and future projected volumes of truck traffic, which leads to long ramp delays and queues that, at times, can extend onto the freeway.

- ✓ **Housing and Jobs**: In spite of job growth in eastern Jackson County, the highest density job centers will continue to be in western Jackson County in the future. This condition could lead to increased separation between housing and job location, with proportionate increases in commute trip length and the potential for increased delay and congestion. This affect could also be lessened by the City of Kansas City, Missouri's plans to revitalize the downtown urban area and add new housing options.

Public Transportation

- ✓ **Transit Supportive Design**: Increases in new housing options associated with the on-going redevelopment and revitalization of Kansas City's urban core / CBD, in conjunction with transit supportive designs could have a beneficial impact that potentially off-sets the separation of housing and jobs discussed in the previous bullet. MARC recently completed a study, entitled *Transit Supportive Development*, based on their potential to accommodate higher densities of residential activity and promote connections to existing or planned transit stations and centers. Transit supportive design can potentially increase the trip quality of all users (vehicular, transit and pedestrians) according to this MARC study conducted in February 2001. The *I-70 MIS* will consider these factors and this MARC guidance where transit centers are analyzed during strategy development.

- ✓ **Transit Service Levels**: The *Comprehensive Metropolitan Transit Initiative Plan - Five Year Transit Plan*, November, 2000 compared the current level of transit service and the level of defined transit needs in the metropolitan area. This regional review of transit service showed that eastern Jackson County needs nearly 603 service hours daily. However, the current transit service available daily is only about 155 hours, indicating a deficit of 448 hours of service. Similarly, nearly 600 additional daily service hours are needed in the urban core. Further, several of the key travel markets in the I-70 Study Area have very limited transit service. Complicating this fact, is the unavailability of local or regional funding to support a more complete and comprehensive regional transit service which is the primary factor contributing to this lack of service. Moreover, only limited CMAQ funding is currently available to help provide express bus service along the I-70 Study Corridor which is scheduled to end in 2002.

- ✓ **Limited Transit Funding:** The annual regional revenue gap to provide transit services is estimated at $70.1 million (according to the MARC *Transit Investment Strategy*, 2001). This is a region-wide gap, and not specific to service levels only affecting the I-70 Study Corridor. It is defined as the amount of funding needed after the receipt of federal grants and the continuation of existing funding sources. The annual gap is also a problem, for similar reasons discussed in the "Transit Service Levels" bullet, because it results in inadequate service levels throughout the I-70 Study Area.

- ✓ **Future Accessibility to Employment Centers**: Future housing growth in eastern parts of Jackson County will place an increasing pressure on commuter travel to employment centers near the Kansas City downtown. There are currently no funded or committed plans to provide transit service to the existing employment centers from the eastern portions of the Study Area.

- ✓ **Transit Infrastructure:** A regional bus system linked to local services by transit centers does not exist throughout the I-70 Study Area. High Occupancy Vehicle (HOV) lanes also do not exist thereby limiting buses and ridesharing potential because these systems are limited by the same congestion that affects traffic regionwide. There are also very few dedicated or exclusive park and ride lots and even fewer regional transit centers that make access to commuter transit services throughout the I-70 Study Area possible.

Bicycle / Pedestrian Facilities

- ✓ **Lack of Facilities:** In early 1994, MARC with funding support from MoDOT began developing the Bicycle Transportation Plan for the Greater Kansas City metropolitan area. This comprehensive bicycle transportation plan, covering a four county, approximately 50 jurisdiction study area, continues to guide MARC and local governments in the development of bicycle facilities. Building on this past initiative, MARC and Greenways, Incorporated, in association with the Trust for Public Land, Patti Banks Associates and ETC Institute, have begun work on an action plan for developing a more comprehensive greenway system throughout the Kansas City metropolitan area. This plan builds on existing work in numerous metro Kansas City communities. The result will be a regional system that connects and unites existing and proposed greenways to produce a *MetroGreen* system that benefits the entire metropolitan area[2]. Currently, a region-wide network of interconnected bicycle facilities within the Kansas City area does not exist.

- ✓ **Lack of Connectivity:** A majority of bicycle facilities within the region are multi-use trails. Widths vary from four to ten feet, with five-foot and eight-foot wide asphalt trails being the most common. Only a few of these facilities meet the national standard for bicycle paths, having smooth, paved surfaces that are a minimum of ten feet wide. Currently, the *MetroGreen* system is being planned as a regional system of 1,030 miles of green corridors and trails linking Johnson, Leavenworth, Wyandotte, Cass, Clay, Jackson and Platte counties in the Kansas City area. The plan updates and builds on a 1991 vision plan for the metro area. A random citizen survey is being conducted to better understand public interest and attitudes regarding greenways and trails in the metro area. This input will be used in the development of I-70 MIS strategies to deal with the connectivity between trails and other transportation facilities. Currently, only a few make multiple connections to adjacent neighborhoods and therefore may not completely fulfill both recreation and transportation needs. Moreover, the existing systems are closed loop trails or linear facilities that traverse parklands with few, if any, access points to the surrounding area. Guidelines are also being developed that define five types of trails.

- ✓ **Barrier to Non-Motorized Transportation:** A number of crossing points for pedestrian and bicycle traffic exist along the I-70 Study Corridor, typically along the streets and highways that cross over or under I-70. However, with few exceptions, the distances between and the design of these crossings have created obstacles to non-motorized travel across the I-70 Study Corridor. This may adversely impact the quality of future land use and development along the Study Corridor.

[2] MARC, *Kansas City MetroGreen News*, April 2001

MARC has developed a *Bicycle Transportation Plan* for the Greater Kansas City area. The MARC plan proposes building various bicycle facilities within the next 5 years. Some of these planned facilities have secured funding from CMAQ, Local CIP etc. In Jackson County, within the I-70 Study Area, planned facilities provide a network of routes with a generally north-south orientation. Facilities are also planned in various locations that could provide transportation routes from Downtown Kansas City to south Kansas City and Grandview. Several smaller loop routes are planned for the Blue Springs area. Implementation of other planned trails within the I-70 Study Area will provide public access into segments of the *MetroGreen* system. The potential for the planned bicycle facilities to fulfill a transportation function will ultimately depend on their location, design and ability to make connections with one another.

ES-7. GOALS AND OBJECTIVES (MIS PURPOSE)

Expectations by the public, whose demands for transportation solutions tend to be sooner rather than later, are understandable. Yet, their expectations by necessity are multi-faceted. Establishing goals that fit the *I-70 MIS* leads to identifying the purpose of the solutions that result from the *I-70 MIS* process. That is, the purpose represents all the unique goals and objectives that ideally would be achieved as a result of making the suggested improvements that come from the *I-70 MIS*. This helps identify what actions need to be pursued in order to coordinate them within the framework of the statewide goals as defined in the *Missouri Transportation Investment Strategy,* Missouri's *Long Range Transportation Plan* prepared by MoDOT. These statewide goals are:

- Ensure safety and security
- Take care of the existing system
- Relieve congestion
- Broaden access to opportunity and essential services
- Facilitate the efficient movement of goods
- Ensure Missouri's continued economic competitiveness
- Protect Missouri's environment and natural resources
- Enhance the quality of our communities

The purpose of the solutions that result from this I-70 MIS process will also be coordinated within the framework of the regional goals as defined in *Transportation Outlook 2030,* Metropolitan Kansas City's *LRTP* being prepared by MARC, which include:

- Support a healthy, strong regional economy
- Maximize access to opportunity for all area residents
- Support a quality built and natural environment

What has become obvious to all corridor users is that I-70 is showing its age. MoDOT's mission, as the principal agency responsible for investing state and highway trust fund resources, is to provide needed improvements within the I-70 Study Corridor between downtown Kansas City and Oak Grove. Building on the information developed for this PDR, the following specific goals, in Figure ES-7 (attached), define the purpose that will guide the development of the transportation solutions for the *I-70 MIS* Study Corridor.

ES-8. INITIAL STATEMENT OF PURPOSE AND NEED

The PDR is the main document that contains and records all the important information and data that was collected and analyzed during the first phase of the *I-70 MIS* process. This important first milestone identifies the major challenges and opportunities which is used as the basis for officially and formally developing the "Initial Statement of Purpose and Need."

The objective of the *I-70 MIS*, based predominately on what has been studied and documented as a result of the *Problem Definition Report*, is to identify a multi-modal investment strategy that will address the above transportation needs and be consistent with regional policy goals and resource constraints. Additional factors may be identified resulting from on-going public involvement and inter-agency review of this report. The adopted multi-modal investment strategy will be expected to satisfy the following statement:

> ***"Initial Statement of Purpose and Need for the I-70 MIS – To advance regional, state and national transportation goals and objectives by improving safety, accessibility and system efficiency, increasing modal choice, maintaining mobility, restoring and maintaining existing infrastructure and preserving or enhancing the built and natural environment in the I-70 Study Area."***

Figure ES-7 portrays this Initial Statement of Purpose and Need for the *I-70 MIS* in a more straightforward manner. This Figure will be used to help establish the framework for screening and evaluating all future proposed I-70 Major Investment Strategies. The findings of the *Problem Definition Report* recommends this statement and the corresponding Figure ES-7 which portrays the targeted goals and objectives as the purpose and need for the *I-70 MIS*.